

## CLAIMS

What is claimed is:

1. An image forming apparatus, comprising:  
a removable media tray, comprising;  
5 a housing;  
a media sheet exit port in said housing;  
a primary media stack area within said housing operative to receive and  
hold a primary stack of media sheets;  
a first pick mechanism within said housing operative to select a media  
10 sheet from said primary stack and move said media sheet to said  
exit port; and  
a pick mechanism drive assembly within said housing operative to  
actuate said first pick mechanism.
- 15 2. The image forming apparatus of claim 1 wherein said pick mechanism drive  
assembly comprises:  
a motor; and  
a first drive train operatively coupling said motor to said first pick mechanism.
- 20 3. The image forming apparatus of claim 1, said removable media tray further  
comprising a connector disposed so as to form electrical contact with a corresponding  
connector disposed within said image forming apparatus when said removable media  
tray is inserted in said image forming apparatus.

4. The image forming apparatus of claim 3 wherein said pick mechanism drive assembly receives electrical power through said connector when said removable media tray is inserted in said image forming apparatus.
- 5 5. The image forming apparatus of claim 4 wherein said connector aligns with said corresponding connector in said image forming apparatus.
6. The image forming apparatus of claim 2, said removable media tray further comprising a multi-purpose tray (MPT) input operative to receive media sheets from an
- 10 MPT stack of one or more said sheets.
7. The image forming apparatus of claim 6 further comprising a second pick mechanism operative to select a media sheet from said MPT stack and move said media sheet to said exit port.
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8. The image forming apparatus of claim 7 wherein said pick mechanism drive assembly further comprises a second drive train operatively coupling said motor to said second pick mechanism.
- 20 9. The image forming apparatus of claim 8 wherein said motor drives said first drive train forward and said second drive train in reverse by rotating in one direction, and drives said second drive train forward and said first drive train in reverse by rotating in the opposite direction.

10. The image forming apparatus of claim 8 wherein said first and second pick mechanisms each include a one-way clutch that restricts motion of said pick mechanisms to the forward direction.
- 5 11. The image forming apparatus of claim 1, said removable media tray further comprising a duplex return path guide operative to receive a media sheet from a duplex return path in said image forming apparatus and direct said media sheet to said exit port.
- 10 12. The image forming apparatus of claim 1 further comprising a large-capacity media sheet supply containing media sheets, and wherein said removable media tray further comprises a media sheet inlet port connected in media sheet flow relationship with said exit port, such that media sheets from said large-capacity media sheet supply pass through said removable media tray into said image forming apparatus via said exit port.
- 15 13. The image forming apparatus of claim 1 wherein said media sheet exit port includes a sensor operative to detect the presence of a media sheet.

14. An image forming apparatus, comprising:  
a removable media tray, comprising:  
a housing;  
a media sheet exit port in said housing;  
5 a primary media stack area within said housing operative to receive and  
hold a primary stack of media sheets; and  
a multi-purpose tray (MPT) input in said housing operative to receive  
media sheets from an MPT stack of one or more said sheets;  
wherein media sheets selected from said primary stack and/or said MPT  
10 stack are directed to said image forming apparatus through said  
exit port.
15. The image forming apparatus of claim 14, said removable media tray further  
comprising:  
15 a first pick mechanism within said housing operative to select a media sheet from  
said primary stack;  
a second pick mechanism within said housing operative to select a media sheet  
from said MPT stack; and  
a pick mechanism drive assembly within said housing operative to actuate both  
20 said first and second pick mechanisms.
16. The image forming apparatus of claim 15 wherein said pick mechanism drive  
assembly comprises:  
a motor;  
25 a first drive train operatively coupling said motor to said first pick mechanism; and

a second drive train operatively coupling said motor to said second pick  
mechanism.

17. The image forming apparatus of claim 16 wherein said motor drives said first  
5 drive train forward and said second drive train in reverse by rotating in one direction, and  
drives said second drive train forward and said first drive train in reverse by rotating in  
the opposite direction.

18. The image forming apparatus of claim 17 wherein said first and second pick  
10 mechanisms each include a one-way clutch that restricts motion of said pick  
mechanisms to the forward direction.

19. A method of determining the size of media sheets in a removable media tray of an image forming apparatus, comprising:
- sensing when said removable media tray is inserted into said image forming apparatus;
- 5 picking a media sheet from at least one stack in said tray by actuating a motor and drive train located in said tray;
- sensing the presence of said media sheet in an exit port of said tray;
- measuring the duration said media sheet is in said exit port;
- calculating the length of said media sheet based on said duration; and
- 10 determining the size of media sheets in said stack based on said length.
20. The method of claim 19 further comprising saving said size in memory.
21. The method of claim 19 wherein picking a media sheet from at least one stack in
- 15 said tray comprises actuating a pick mechanism positioned in said tray.
22. The method of claim 19 wherein actuating a pick mechanism positioned in said tray comprises activating a motor positioned in said tray, said motor connected to said pick mechanism by a drive train positioned in said tray.
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23. The method of claim 19 wherein picking a media sheet from at least one stack in said tray comprises picking a media sheet from either a first or second media sheet stack area in said tray.

24. An image forming apparatus, comprising a removable media tray including a first media sheet stack area and a second media sheet stack area, said first and second media sheet stack areas disposed in a generally horizontally aligned position in said tray.

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25. The image forming apparatus of claim 24 wherein said first and second media sheet stack areas share at least one alignment surface.

26. The image forming apparatus of claim 24 wherein said removable media tray is  
10 inserted into and removed from said image forming apparatus from one side of said image forming apparatus.

27. The image forming apparatus of claim 26 wherein said removable media tray is  
15 inserted into and removed from said image forming apparatus from the front side thereof.

28. The image forming apparatus of claim 24 wherein said removable media tray  
further includes first and second pick mechanisms operative to pick media sheets from  
said first and second stacks, respectively.

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29. The image forming apparatus of claim 28 wherein said removable media tray  
further includes a motor and first and second drive mechanisms operatively coupling  
said motor to said first and second pick mechanisms, respectively.

30. A method of operating an image forming apparatus, comprising:  
inserting a first removable media tray into said image forming apparatus, said  
tray including first and second media sources and a motor;  
picking a media sheet from said first media source by actuating said motor in in a  
5 first direction;  
picking a media sheet from said second media source by actuating said motor in  
a second direction;  
removing said first tray from said image forming apparatus; and  
replacing said first tray with a second tray also including first and second media  
10 sources and a motor.

31. The method of claim 29 wherein said first and second trays are two of a plurality  
of Customer Replaceable Units (CRU), each said CRU comprising first and second  
media sources and a motor.

32. The method of claim 30, each said CRU additionally comprising first and second  
drive trains operatively connecting said motor to first and second pick mechanisms,  
respectively, said first and second pick mechanisms operative to pick media sheets from  
said first and second media sources, respectively.



33. An image forming apparatus, comprising:  
a removable media tray including first and second media sources and an  
integrated drive train operative to selectively pick media sheets from said  
first or second media source.

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34. The image forming apparatus of claim 32 wherein said removable media tray  
further includes a motor operatively connected to said integrated drive train.

35. The image forming apparatus of claim 33 wherein said motor drives said  
10 integrated drive train to pick a media sheet from said first media source by rotating in  
one direction, and drives said integrated drive train to pick a media sheet from said  
second media source by rotating in the opposite direction.